BEFORE THE STATE OF WASHINGTON

ENERGY FACILITY SITE EVALUATION COUNCIL

In re Application No. 96-1 OLYMPIC PIPE LINE COMPANY CROSS CASCADE PIPELINE PROJECT,	NO. **REBUTTAL TESTIMONY OF CAPT. JOHN R. FELTON AND PAUL F. GALLAGHER** ISSUES: MARINE CASUALTY AND OIL SPILL RISKS, SPILL RESPONSE SPONSOR: OLYMPIC PIPELINE COMPANY

Q: Capt. Felton, please introduce yourself to the Council.

A: My name is Capt. John R. Felton. I reside at 3049 N.E. 94th St., Seattle, WA 98115.

Q: Please describe your professional qualifications and experience relating to your testimony on marine casualties, oil spill risks, and spill response.

A: I retired with rank of Captain from the U.S. Coast Guard in 1989 after 23 years of service, 18 years served in the marine safety field. During my Coast Guard career I spent 9 years stationed in Seattle, 7 of which (1971-1973 and 1985-1989) were in the Marine Safety Office where I served as a marine inspector, investigating officer, chief of the Inspection Department, chief of the Licensing Department, Executive Officer, and ultimately, as the Commanding Officer from July 1987 until September 1989, when I retired. I was responsible for and directed the creation of the Coast Guard oil and hazardous materials contingency and response plans for Puget Sound and Washington's coastal waters. As the Commanding Officer (also known as "Captain of the Port"), I was pre-designated as the Federal On-Scene Coordinator for responding to oil and hazardous material releases into or threatening Washington's waters.[1] While in this role, the Marine Safety Office responded to over 300 spills per year. I personally responded to two major barge spills in 1988 involving the NESTUCCA (spill of approximately 231,000 gallons of fuel oil) and MCN No. 5 (spill of approximately 63,000 gallons of heavy cycle gas).

Following my retirement from the Coast Guard, I was the Manager of Foss Environmental Services ("Foss Environmental") from 1989-1993. As manager of Foss Environmental I personally

[1] Under the National Contingency Plan, any response to an oil spill or release of hazardous materials of significance is coordinated and directed through a Unified Command System, which is comprised of a Federal On-Scene Coordinator (representing the federal government's interests), a State On-Scene Coordinator (representing the state's interests if the spill is within or threatens state waters),

directed the cleanup of over 50 oil spills in Puget Sound waters. Foss Environmental is presently the leading oil spill clean-up contractor in the Pacific Northwest, and the primary contractor for Washington State Maritime Cooperative ("WSMC"). WSMC is a non-profit corporation established in 1991 to provide an umbrella oil spill contingency plan and response resources for vessels transiting Washington's waters to enable them to meet Washington State regulations. Over 90% of all vessels transiting Washington's waters that are required by law to have oil spill contingency plans are enrolled with WSMC' (known as "member vessels").[2] In the event of spills by member vessels, Foss Environmental is under contract to WSMC to provide the necessary response resources to comply with the state approved contingency plan.

For the past five (5) years, I have served as Response Manager for WSMC, so I am still involved with Foss Environmental in a manner of speaking. In this role, I am responsible for immediate implementation of WSMC's umbrella contingency plan to clean up a member vessel's oil spill. In other words, I direct the clean up and mitigation efforts on behalf of the member. This requires me to use all available tools to make a quick assessment of the severity of the spill, and callout of appropriate response resources (e.g., vessels, personnel, aircraft, local agencies), including Foss Environmental personnel and equipment. I then implement and direct whatever response strategies may be necessary. As the pre-designated Incident Commander acting as agent of the member company, my responsibility is to quickly and efficiently cause the oil to be removed from the environment, if possible, and to minimize the impact to natural resources. Since becoming Response Manager for WSMC, I have responded to and directed the cleanup of 20 spills. A more detailed

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and a responsible party representative (RP) acting as agent on behalf of vessel owner.

[2] The member vessels are vessels greater than 300 gross tons, including tankships, tank barges, freight ships, fishing industry vessels and passenger vessels.

summary of my experience is attached as Exhibit FG-1.

Q: Mr. Gallagher, please introduce yourself to the Council.

A: My name is Paul F. Gallagher. I reside at 8315 22nd Ave. N.W., Seattle, WA 98117.

Q: Please describe your professional qualifications and experience relating to your testimony on marine casualties, oil spill risks, and spill response?

A: I am currently Operations Manager, Marine Services, for Foss Environmental Services, which is one of the leading oil spill response organizations in the Northwest. Capt. Felton has already described our company profile and the critical role of Foss Environmental in responding to oil spills into Washington waters. As Operations Manager, my responsibilities include all aspects of marine oil spill response – from response management, equipment maintenance, planning and personnel training. During an actual or simulated response incident, I act as operations manager as well as a liaison between customer and federal/state agencies. I am often required to coordinate closely with WSMC's Incident Commander, who is currently Capt. Felton. During my career with Foss Environmenal, I have responded to and directed responses to over 150 spills in the Pacific Northwest, Hawaii, Mexico and Puerto Rico.

Prior to my employment with Foss Environmental in 1992, I served stints as deck officer on a scientific research/drilling vessel, an escort vessel in the Vessel Escort Response System in Prince William Sound, and on various tank vessels carrying petroleum products along the U.S. West Coast. I hold a Bachelor of Science degree from Maine Maritime Academy and a Master of Science degree from University of Washington, School of Marine Affairs. Additionally, I hold a Master's License for 1600 gross tons, oceans, and a 2nd Mate's License, steam and motor, oceans, unlimited tons. A more detailed summary of my experience is attached as Exhibit FG-2.

Q: Do either of you have an opinion as to which mode of petroleum transportation is safer: The current transportation system, including the marine and Columbia/Snake River transportation portion, or the proposed Cross Cascade pipeline?

A: No, we do not. Neither of us has any significant experience or expertise in pipelines. We were requested by Olympic Pipeline Company to evaluate the pre-filed testimony sponsored by Council for Environment, Tidewater Barge Company, and others as if the proposed pipeline project were not pending before the Council. As such, our roles are to use our extensive, practical marine safety and oil spill experience to assess their pre-filed testimony on marine transportation risks and determine whether their conclusions are fair and realistic.

Q: And did you reach any conclusions?

A: Yes. The pre-filed testimony of J. Wesley Miller, David F. Dickins and Steven Hughes (and his NRC team) addresses many of the major areas of risk associated with marine transportation of petroleum products from Puget Sound to eastern Washington. However, their conclusions appear to be largely driven by statistical analyses using national spill data that do not reflect the full risk to the marine and estuarine environment and the general public in the Pacific Northwest.[3] While statistics

[3] The barge spill database used by these individuals includes spills from the entire U.S., and yet the Pacific Northwest presents unique navigational risks that pose hazards specific to this area. Passage by tug and barge through the San Juan Islands, the Strait of Juan de Fuca, the outer coastal region of Washington, and the Columbia River bar can be extremely dangerous depending on prevailing conditions. Strong currents and winds and heavy wave action are common; vessel traffic is encountered at every juncture of the route. The Columbia bar is so treacherous that the Coast Guard sends personnel to be trained in rescue techniques at the nearby Coast Guard station. By using a national database, however, Mr. Miller and Mr. Dickins apparently made no attempt to isolate and evaluate these Washington specific risks. Spill data from the 13th District of the U.S.C.G. here in the Pacific Northwest shows that the average barge spill size in this region between 1985-1998 is approximately 3,000 gallons per spill (or approximately 1,458,000 over a 50 year period using Mr. Miller's spill frequency estimates.)

can be very helpful in an analysis of this nature, the spill volume estimates of Mr. Miller and Mr. Dickins omit certain oil spill data and fail to incorporate, or even acknowledge, risks that most oil spill response experts and mariners would readily include. The current marine transportation system is a good system on balance, but the real risk is considerably higher than depicted by them.

Q: What do you mean?

A: For example, Mr. Miller calculates 545 gallons as the average barge spill size for the next 50 years. This calculation seems very low based on our experience, notwithstanding that many barge spills are relatively small. Extrapolating over the 50 years and using his estimates for spill frequency, he "predicts" that a total of 210,104 gallons will be spilled into Washington waters and/or the Columbia/Snake River system. For the sake of Washington and Oregon citizens, we wish that his estimates reflected reality. As discussed below in greater detail, however, Capt. Felton personally responded to two barge spills in Puget Sound in 1988 that caused almost 300,000 gallons of petroleum products to be released into the waters of Washington. Mr. Miller's and Mr. Dickins' "predictions," therefore, must be viewed with some skepticism. As recently as ten years ago, more oil was released in a twelve month period than either "predicts" for the next 50 years.

Q: Why are the estimates of Mr. Miller and Mr. Dickins so low with respect to the spill risks of the current marine transportation system?

A: We are aware of at least one local barge spill of significance in late December, 1994 involving the Crowley No. 101 barge that spilled approximately 26,900 gallons of diesel oil into Puget Sound. Mr. Miller omitted this barge spill from his analysis altogether. By our calculations, if the Crowley No. 101 incident in 1994 is included, the average spill volume would increase to approximately 2,300 gallons (without adjusting for other errors and omissions in his analysis). Over a fifty year period, this would equate to over 887,000 gallons being spilled if Mr. Miller's spill frequency calculation is used (as compared to his estimate of 210,104 gallons).

Mr. Dickins, on the other hand, simply did not estimate expected spill volumes for the Puget Sound to Portland segment of the current marine transportation system for reasons that are not clear. His estimate of 49,600 gallons over fifty years is for the Columbia/Snake River segment only, and even then only for barges, not tugs and barges. In fact, the collective analyses of Mr. Miller and Mr. Dickins fail to include any discussion of the oil spill risks associated with the operation of tugs, which carry upwards of 25,000 to 100,000 gallons of fuel oil to operate the tugs' main and auxiliary engines. As such, their estimates understate the risk of the current marine transportation system because their estimates relate to barge spills only, without acknowledging that tugs are involved in marine casualties such as collisions, allisions, etc., while engaged in barge-related activities separate from the barge itself. Further, although the average spill volume of bunker spills is usually small, spills during bunkering (i.e., while fueling the tug) are not uncommon. Neither Mr. Miller nor Mr. Dickins account for these tug-specific risks.[4]

Q: Are there any other explanations for their low predictions?

A: Yes. Mr. Miller selected only three (3) years – 1992, 1994, and 1995 – for his barge spill risk analysis, while Mr. Dickins used 1992 to mid-1997 only. Their selection of these years caused us to question whether their analysis was driven, at least in part, by the outcome that each wanted to reach, i.e., the proposed pipeline project is not as safe as the current marine transportation system. To justify this rather narrow selection of years, each of them urge the Council to ignore pre-1992 spill data

[4] To illustrate, spill data from the 13th District of the U.S.C.G. here in the Pacific Northwest shows that there were approximately 227 spills from tow vessels between 1985-1998, totaling 5,902 gallons (or 454 gallons per year).

because the enactment of the Oil Pollution Act of 1990 ("OPA") has significantly decreased spill frequency and volume.

Q: Do you agree with their assertion?

A: No, not necessarily. While the implementation of OPA's regulatory scheme has caused a measurable decline in oil spill frequencies and volume, many significant risks of marine transportation cannot be eliminated even with the strictest of laws and regulations. Unfortunately, with human error and structural/equipment failures, waterborne commerce and marine casualties will always go hand in hand. For example, the number of collisions, allisions (vessels striking fixed objects such as bridges), groundings, sinkings, and structural failures – the very type of casualties that are likely to cause major oil spills -- was largely unaffected by OPA's passage.[5] Pre-1992 barge spill data, therefore, should not be automatically ignored when attempting to determining the risks associated with transporting petroleum products from Puget Sound to eastern Washington by water.

To be fair and comprehensive, each should have cast their analysis more broadly to include pre-1992 barge spills that are not likely to have been affected by post-OPA regulations spills (i.e., groundings, collisions, allisions, sinkings, and structural failures). Mr. Miller and Mr. Dickins should have at least considered earlier barge spill data to determine what impact this data may have on their analyses, if any. To illustrate, as we mentioned earlier, Capt. Felton personally responded to two major barge spills in 1988 as U.S. Coast Guard Commander of the Marine Safety Office in Puget Sound. The first was the capsizing and subsequent sinking of the barge MCN No. 5 near Anacortes,

[5] Mr. Dickins essentially acknowledges this point in his pre-filed testimony (Dickins at p. 15) when he uses marine casualty data on groundings, collisons, or structural failures to predict the future benefits of double hull designs. Implicit within his usage of this data is the assumption that these

WA in January, 1988. This incident resulted in a spill of approximately 63,000 gallons of heavy cycle gas oil. True and correct copies of media reports and a more detailed summary of the MCN No. 5 spill are attached as Exhibit FG-3.

The second involved the release of approximately 231,000 gallons of fuel oil from the tank barge NESTUCCA, which was holed by a collision with its tug near Grays Harbor, WA in December, 1988. The incident occurred when the tug, after losing the NESTUCCA in heavy weather, was attempting to place a rescue team aboard the barge to re-establish the tow system before the barge drifted ashore. In the severe weather and sea state, the tug punctured the NESTUCCA during this personnel transfer operation. The oil slick from this incident ultimately caused significant environmental damage as far north as Vancouver Island. True and correct copies of media reports and a more detailed summary of the NESTUCCA spill are attached as Exhibit FG-4.

Our point is that these incidents – both of which were very significant in nature – could have just as easily occurred in 1995 as in 1988, and yet Mr. Miller and Mr. Dickins fail to even consider their inclusion in their respective statistical analyses (possibly because their estimates of average spill size would dramatically increase), much less advise the Council that the incidents occurred at all. The nature of these casualties are typical risks of marine transportation. To exclude them from the barge spill database as conveniently as do Mr. Miller and Mr. Dickins was very troublesome. Again, the current marine transportation system is a good system on balance, but the risks should not be understated simply because the clients of Mr. Miller, Mr. Dickins and Mr. Hughes appear to oppose the proposed pipeline project. If these spills had been included in their database, the average spill volume would likely be considerably higher.

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types of casualties will continue at the same rate in the future.

Q: Are there other spill risks that you feel were improperly excluded or downplayed by Mr. Miller, Mr. Dickins and Mr. Hughes?

A: Yes. All of them suggest to the Council that all marine oil spills are detected immediately and the amount of oil spilled will thus be mitigated by an early and efficient response. As a general statement, this representation may be true for the majority of marine spills; however, it is not uncommon for spills – particularly at night or in heavy weather – to go undetected for a significant period of time, making an effective spill response extremely difficult or impossible. For example, the Crowley No. 101 and MCN No. 5 spills referenced earlier occurred at night and the spills were not "assessed" until the following mornings. This slow assessment impaired recovery efforts significantly, as in each instance the oil had spread over considerable distances. True and correct copies of media reports and a more detailed summary of the Crowley No. 101 spill are attached as Exhibit FG-5.

In addition, the spill frequency and volume "predictions" of Mr. Miller and Mr. Dickins further assume that navigational risks, e.g., vessel traffic, will remain constant for the next 50 years – an assumption that we do not believe is realistic. To make this assumption, they ignore that barge traffic between Puget Sound and Portland and California and Portland will substantially increase if the proposed pipeline project is not constructed. This increase, by itself, creates additional navigational and oil spill risks that are not captured in their respective statistical analyses. Further, it assumes that all other vessel traffic (i.e., tankers, freighters, ferries, cruise ships, container ships, etc.) will experience zero growth for five decades. If this is correct, the Council should inform the Washington State Port Authorities because the Ports are forecasting continued growth into the future.

Q: What other marine oil spill risks appears to be downplayed by them, if any?

A: The pre-filed testimony of Mr. Miller, Mr. Dickins, and Mr. Hughes (and his NRC team) appears to downplay the spill risk to environmentally sensitive marine habitats and sanctuaries that parallel the entire marine transportation system from Puget Sound to Portland. In our respective roles for WSMC and Foss Environmental, we are required to be knowledgeable of these habitats because we are responsible for devising response strategies to protect them from harm, if possible, in the event of a spill. To illustrate these spill risks, the Council is invited to reference NOAA's "Environmental Sensitivity Index" maps (known as "ESI" maps) and Geographic Response Plans ("GRPs") for Washington waters which set out in color-coded fashion the nature and location of this region's environmentally sensitive habitats for each season of the year.[6] Due to their size, shape and volume, true and correct copies of the applicable ESI and GRP maps will be provided at the hearing. At that time, the typical barge routes from the Cherry Point and Anacortes, WA refineries to Portland, OR will be overlaid on the ESIs and GRPs in order that the Council can readily appreciate the barge routes' proximity to valuable natural resources. As even a cursory review will show, the typical barge routes pass through or by critical salmon and wildlife habitat, important estuaries, and vital marine sanctuaries. An oil spill of any significance at any juncture of the barge routes has the very real potential to cause serious environmental damage. Yet, despite the danger, the pre-filed testimony of Mr. Miller, Mr. Dickins and Mr. Hughes did not appear to us to fully and fairly acknowledge these risks.

[6]For the Council's information, an ESI map consists of the environmentally sensitive shoreline habitats, wildlife, and socio-economic resources in the region covered by the map. The ESI map's legend sets out, by color and symbol, the specific species of birds, mammals, shellfish and fish that are at risk in the event of an oil spill. ESI maps are used by first responders to oil spills -- individuals like us – in conjunction with GRPs, to assist us in establishing priorities for protecting natural and socio-economic resources. In essence, GRPs are "standing orders" by the federal and state agencies to first responders to avoid the initial confusion that generally accompanies any spill.

Q: Aren't you overstating this risk? A major oil spill of this nature has never occurred in this region.

A: No. As we stated earlier, the current marine transportation system is a good system. The barges that make the voyage from the Washington refineries down to Portland, Oregon are typically 40-60,000 barrel vessels. Most companies in this ocean-going barge trade use tugs with twin screws for safety reasons, and barge traffic stays at least 25 miles off the coast due to the National Marine Sanctuary rules. Tug captains are licensed by the Coast Guard and are proficient at their trade. Towing vessels are equipped with radar and modern electronic navigation systems. These voyages are routinely made carrying millions of gallons of product without incident.

However, accidents do happen. As so many of us in the oil spill response business have been told by the environmental community, it is not "IF" it happens, but "WHEN" it happens. [7] If a tug has a fire or major mechanical failure while towing a loaded barge off the Washington coast which disables the towing vessel, or if the barge towline parts during a storm and the tow cannot be retrieved, will it go aground on the Washington coast? We all hope not. Can it go aground and cause a massive release of oil in environmentally sensitive areas? The answer is most certainly "yes". Under adverse conditions, such as high winds and heavy seas blowing the vessels towards shore, it would be foolish to believe otherwise. Other tugs called to the scene may not arrive in time or may not be effective in putting a line on the stricken vessels in the heavy weather and sea state.

And what would likely occur in this not-so-hypothetical scenario? Predictably, the rocky shores of the Washington coast would not be so forgiving as the sandy beach near Coos Bay that saved the NEW CARISSA and the Oregon coast from greater damage. The entire cargo of petroleum

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[7] We believe Ricky Ott of Cordova, Alaska is credited with saying that on the 23rd of March 1989 at a

products would be at risk – as much as 2,500,000 gallons or more. Diesel oil is not as persistent as heavier fuel oils, but environmental damages in this National Wildlife Refuge would be substantial from a diesel spill. And if this casualty were to happen under adverse weather conditions, none of the strategies in the GRPs would be effective in protecting sensitive resource areas. Little, if any, of the oil would be recovered until after the storm subsided, and even then only a small percentage would be recovered from protected bays and river inlets.

Q: Are there any examples in recent years that illustrate your point?

A: Yes. In the last few years, several barge spills have been in the news. Most noteworthy are the NORTH CAPE, BUFFALO 292, and MORRIS J. BERMAN spills:

- The towing vessel and barge NORTH CAPE grounded off the coast of Rhode Island in January 1996 after the tug caught fire and lost all propulsion power. High winds drove the vessels ashore before help could arrive on scene. The NORTH CAPE grounding breached tanks and released 828,000 gallons of No. 2 fuel oil. A true and correct copy of the videotape of news coverage of the NORTH CAPE incident is attached as Exhibit FG-7.
- The barge BUFFALO 292 while under tow in the Houston Ship Channel in March 1996 suffered a structural failure and released 210,000 gallons of intermediate fuel oil into Galveston Bay. A true and correct copy of the videotape of news coverage of the BUFFALO 292 incident is attached as Exhibit FG-7.
- In January 1994 the MORRIS J. BERMAN grounded on a reef near Puerto Rico releasing 798,000 gallons of heavy fuel oil into the marine environment. The grounding was caused by the towline parting while the barge was in tow.

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community meeting (immediately before the Exxon Valdez oil spill).

Q: What lessons should be learned from the recent NEW CARISSA incident?

A: As everyone in the Pacific Northwest is aware, the NEW CARISSA, a cargo ship, dragged anchor during a storm and was driven ashore near Coos Bay, Oregon. It ultimately broke in two parts and over 70,000 gallons of heavy fuel oil spilled from its double bottom tanks before salvage experts used a technique to burn off as much fuel oil as possible. After several weeks of preparation and failed attempts to salvage the vessel, the bow was towed out to sea to be intentionally dumped into deep water 200 miles off shore. The towline parted when the bow was about 50 miles off shore and because of high winds and seas, the tow could not be retrieved. High winds blew the bow back ashore near Waldport, Oregon, 75 miles north of Coos Bay.

What this serves to illustrate is that some of the best salvors in world -- salvors who were on scene at the time the towline parted – could not re-establish the tow in heavy weather before the bow section drifted 50 miles back to shore. If this could happen with the NEW CARISSA, therefore, it could certainly occur to a lone tug and barge in heavy weather and seas that were 25 miles off the coast of Washington.

Q: The NEW CARISSA, NORTH CAPE, BUFFALO 292 AND MORRIS J. BERMAN barge spills are high profile spills that most people are aware of by virtue of media coverage. Are there other marine casualties that illustrate the danger of marine transportation of petroleum products but which – due to good fortune – did not result in a spill?

A: Absolutely. Such incidents occur more frequently than most people would imagine. As an example, the tank barge CASCADES, which was operated by Foss Maritime, was struck while approaching the Columbia River entrance in 1993 by a Chinese grain ship, the M/V Tian Tan Hai. Dense fog prohibited a timely assessment by air but cleanup resources were called out immediately by

Foss Maritime. Fortunately, no oil was spilled, but damage to both vessels was extensive. The CASCADES was carrying over 2,500,000 gallons of heavy vacuum gas oil at the time. If not for pure fortuity, however, a major spill could easily have resulted. Other examples of “near misses” are shown in the videotape attached as Exhibit FG-7.

Even Tidewater Barge Lines (“Tidewater”), which is a very reputable barge operator, has experienced its share of “near misses” and good luck that averted more serious disasters. In the past fifteen years, Tidewater has had over 20 of such incidents, a small sample of which follow:

- In 1999, a line parted while the tug and grain barge ORIENTAL EXPRESS were maneuvering into a loading terminal near Portland, Oregon. Control of the barge was lost and the barge drifted into the dock doing considerable damage to the dock and concrete pilings. A true and correct copy of the videotape of news coverage of the ORIENT EXPRESS incident is attached as Exhibit FG-7.
- In 1995, the operator of the Tidewater tug CHALLENGER fell asleep, causing two barges to ground. A similar occurrence occurred previously in 1986. Fortunately, no petroleum products were spilled in either instance because the barges were not carrying oil products.
- In 1995, the operator of the Tidewater tug OUTLAW passed out at the helm, grounding one barge. No petroleum products were spilled, although one of the barges under tow contained a full load of diesel.
- In 1995, the Tidewater tug CAPTAIN BOB was pushing 5 barges downriver. As it exited John Day Dam, the operator ran the train of barges over Buoy No. 45, and the tow subsequently grounded on the Washington side of the Columbia River. Barge No. 47 was holed and ultimately broke free and capsized, spilling approximately 3,000 tons of wheat.

A true and correct copy of the U.S. Coast Guard Marine Casualty Investigative Report is attached as Exhibit FG-8.

- From 1985-1995, Tidewater's operations were involved in a series of incidents involving human error (e.g., navigational errors) that resulted in the grounding of various barges. One of these incidents – in February, 1990 – resulted in the Tidewater tug SUNDIAL striking the Interstate 205 bridge.

Our intention here is not to embarrass Tidewater because many reputable in-land barge operators can recount "near misses" of this nature despite the best safety efforts of all involved. It serves as notice, however, that even Tidewater's operations are not immune to such failures. But for Tidewater's good luck, any of these incidents could have resulted in significant spills under different circumstances.

Q: Are there other portions of Mr. Miller's, Mr. Dickins' and the NRC teams' pre-filed testimony that concern you?

A: Yes. None of the testimony sponsored by Council for Environment, Tidewater Barge Company or the others addressing marine spill risks appear to give any significant weight to the difficulty in responding to oil spills, particularly on the Puget Sound to Portland segment of the current marine transportation system. The issue is largely dispensed with by reference to superior marine oil spill response capabilities and the marine environment's superior resiliency. Perhaps land-based spills are less difficult to clean-up, but marine spills present major challenges.

Q: What types of challenges?

A: We are very proud of the capabilities of WSMC and Foss Environmental, and we appreciate that Tidewater Barge Lines is equally proud of its preparation and training. However, as proud and hopefully prepared that we are, we have to acknowledge our limitations. Marine spill response and spill recovery seldom is as efficient and successful as suggested by Mr. Miller, Mr. Dickins and Mr. Hughes. Weather and sea conditions can prevent response altogether. At other times, response is possible, but weather and sea states make recovery of oil next to impossible. To pretend to the contrary is to ignore reality. The MCN No. 5 and NESTUCCA spills serve as excellent examples of these challenges. See Exhibits FG-3 and 4.

Q: Would you briefly describe the mechanics of responding to a marine spill and the general considerations you are required to evaluate?

A: Yes. There are several phases to a significant oil spill response and cleanup: Detection, assessment, containment, recovery (onshore and open water), decontamination, disposal, and restoration. Assessment, containment, and recovery are the phases that we routinely deal with and we will limit our answer to those phases.

The first step in a successful response to a reported oil spill is the proper assessment of the spill. What type of oil was spilled? How much of it was spilled? What atmosphere testing should be done at the spill site? Will it be safe for personnel to enter the affected area? What type of protective clothing should be worn by initial responders? Where is the oil located? What are the wind and current conditions at the spill site? What is the visibility? What are the sea conditions at the site? Most of this information is readily available from communications with the vessel that had the release. An aircraft over flight can also provide much valuable information. An aerial assessment gives quick information as to the direction the oil is traveling and a rough confirmation of the amount reportedly spilled.

The next phase is containment and recovery operations. Initial containment is vital for obvious reasons. Containment action should be initiated as soon as possible and in most cases at the same time the assessment is being done. If the majority of the oil can be contained, then the recovery of the oil is made much easier. Recovery operations should commence as soon as the equipment arrives on scene. Open water recovery is done by vessels using some sort of device to take up the oil off the water with minimal amount of water. There are many different “skimming” systems used by these vessels, but all employ just a few basic principles to pick up the oil without including a large amount of the sea water.

On shore recovery is also a mechanical process. It can be done with conventional earth moving equipment, such as graders, bulldozers, and dump trucks, on accessible hard sandy beaches. Rocky beaches, cobble beaches, and remote access areas are usually cleaned by a large labor force picking up the oil with rakes, shovels, squeegees, and sorbent materials. Storage for the recovered oil is usually done by an oil barge for the skimming vessels and end dumps or large garbage containers for beach residues.

Q: When responding to marine spills, are there different challenges for different geographic locations?

A: Absolutely. On a typical voyage from Puget Sound refineries to Portland, barges pass through difficult, and in places, treacherous waters – Puget Sound, the Strait of Juan de Fuca, the outer coast of Washington, the Columbia River bar and the lower Columbia River -- that pose a variety of challenges to spill recovery. Sea and wind conditions play a major role in any spill response because the oil spreads out naturally from gravity and is subject to movement by the wind and current. If a tank were holed and continuously leaking, and if the current was just 2 knots, the oil slick would be spread over 4 linear miles within two hours. So the challenges are significant and impossible at times. Under adverse sea conditions, recovery operations are simply not possible. The BUFFALO 292 spill in Galveston is an excellent example of this point. See Exhibit FG-7.

Q: Is there a "rule of thumb" in the industry for the amount of spilled product that is likely to be recovered on average?

A: We don't know if it is a rule of thumb, but many individuals in the industry believe that a typical recovery is only 10-15% despite the level of preparedness of many competent spill responders. We think that may be a fairly accurate average for open water recovery of a large spill. At times we can do much better than that with a little luck; wind and currents blowing the oil into a bay, for example, may limit the spreading of the oil. And under unfavorable conditions, e.g., high winds and sea, with no natural containment area, then we probably do worse than 15%. There are so many variables - weather, temperature, quantity spilled, type of oil, current, wave conditions, etc. - no spill is truly typical. Unfortunately, our society must rely heavily on Mother Nature to clean up marine spills, despite the industry's best efforts.

DATED this ___ day of March, 1999.

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Capt. John R. Felton

DATED this ___ day of March, 1999

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Paul F. Gallagher